

Benjamin Bell Surgeon
Sc D. Edinburgh.
in a testimony of respect from
AN *D. Hosack*

INTRODUCTORY LECTURE

ON

MEDICAL EDUCATION;

DELIVERED AT THE COMMENCEMENT OF THE ANNUAL COURSE OF
LECTURES ON

BOTANY AND THE MATERIA MEDICA.

PUBLISHED AT THE REQUEST OF THE STUDENTS OF MEDICINE.

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Qui eam vult discere scientiam, debet bonam sequi methodum, bonos legere authores, qui viam dant ad hanc scientiam acquirendam, nihil admittere debet, quod non faciat ad illam, et nihil omittere quod necessarium est, ut acquiratur illa scientia.

BOERHAAVE, *Methodus. Discendi Medicinam.*

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ERRATA.

In page 10, line 16, for "D'Azyz" read D'AzYR.

13, 15, "purefactive" read putrefactive.

20, 20, "D'Azyz" read D'AzYR.

25, 10, "opinions" read operations.

40, 2, "minerals" read animals.

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LECTURE, &c.

MANKIND, in the early ages of society, when their diet, dress, and modes of life, were simple, and their wants were those of nature, instead of the artificial appetites which are suggested by fashion and caprice, were subject to but few diseases, except such as proceeded from external accidents. Consequently, medicine was in so little demand, that it was not of sufficient importance to be constituted the object of a separate profession; and the remedies which were employed in the cure of diseases were few and simple. Hence we learn that this branch of knowledge was, at first, chiefly confined to the fathers or heads of families.* But society advancing in arts, also advanced in luxuries; the catalogue of diseases became enlarged;

* See l'Origine des Loix, des Arts, et des Sciences, tom. II. lib. iii. p. 9.
Les peres avoient soin d'enseigner a leurs enfans ce qu'ils pouvoient en-
sçavoir. C'est ceque nous apprennent les plus anciennes traditions.—
Diod. lib. i. p. 30.

new observations were made, and remedies proportionably increased in number. This kind of knowledge, at length, not only proved too burthensome to those who were occupied with concerns of a different nature, but also involved those duties which such as were pursuing the ordinary avocations of life could not discharge.

Accordingly, the art of healing was afterwards transferred to their priests and philosophers, as being more nearly allied, in its nature, to the subjects of their professions.

The priests took upon themselves the cure of diseases, from the consideration that they were punishments inflicted upon mankind for their crimes, and that many of them were only to be relieved by their arts and invocations.* Medicine, also, claimed some notice as a part of the study of nature,† and thus fell to the attention of their wise men, or philosophers. In proof of this, it is related of that celebrated philosopher of antiquity, PYTHAGORAS, that he travelled from place to place, not so much to teach the peculiar doctrines of his philosophy as to prac-

* *Morbos vero ad iram Deorum immortalium relatos et ab iisdem opem posci solitum.* See Celsus, lib. i. in præf.

† *Ita ut morborum curatio et rerum naturæ contemplatio, sub iisdem autoribus nata sit.* Celsus, lib. i. in præf.

tice physic. Such was the unsettled state of medicine, until HIPPOCRATES separated it from the religion, the philosophy and speculative learning of his time; and, by enriching it with his own extensive and valuable observations upon the nature and cure of diseases, gave it the form and stability of a distinct science, and worthy to be pursued as the exclusive business of a man's life. Thus constituted a separate and liberal profession, it has deservedly ever been respected and cultivated as among the most important of human inquiries.

Such of you, Gentlemen, as are now preparing yourselves as candidates for the practice of this profession, are, no doubt, fully apprised of its important nature—having for its objects the preservation of health, and the cure of diseases. You are also unquestionably impressed with a sense of the duties you are necessarily to take upon yourselves, when you may enter upon the administration of medicines, in the treatment of the numerous and complicated diseases to which the human frame is exposed.

Under this impression of duty, I am persuaded you will not willingly forego any opportunity by which you can either add to the

general cultivation of your minds, or render yourselves better qualified for this important undertaking. But, from a want of proper guidance and instruction, I have observed some among you betrayed into habits of inattention, which, if they do not lead to the loss of reputation, will never qualify you beyond the mere mechanical exercise of your profession. Others I have seen seduced, by the natural bias of the imagination, into a fondness for the more amusing branches of medical study, to the exclusion of those which are more essentially important.—Having frequently witnessed this sacrifice both of time and talents, I have thought it might be useful to submit to your consideration a few remarks upon the different objects of your attention as students of medicine, and the order in which they should be pursued.

I presume the greater part of you have entered upon the study of physic, prepared with the knowledge of the usual preliminary branches of classical education; that you are acquainted with those *Languages* which are employed as the common vehicles of learning at the present time—the Greek, the Latin, French and German languages; that you are acquainted with *Belles-Lettres*,

Geography, the elements of *Mathematics*, and *Natural Philosophy*, together with an outline of the *faculties of the mind*, and of the *history of human society*. But to those of you who have not yet had opportunities of a regular course of collegiate education, and, from your time of life, are still desirous of entering immediately upon medical study, I must recommend, so to divide your time that you may appropriate a portion of it to the several subjects I have enumerated, under the direction either of private teachers or of the professors of the college, as far as your circumstances and several situations will admit. Curiosity as well as duty will lead you to subjects of this nature, by which you may not only become better acquainted with your profession, by which you may not only learn the numerous improvements medicine has received, and is daily receiving, in different parts of the world—but by which you will also add to the natural strength of your understandings, and thus furnish your minds with resources to meet the numerous difficulties you are to expect in the practice of physic; and, be assured, that in the prosecution of those subjects, whether you are engaged in the study of language, the demonstra-

tions of geometry, or in examining the principles of philosophy, either of mind or matter, you cannot spend an useless hour. The mind, capable of observation and improvement, will find in these preparatory branches of learning, not only subjects of gratification, but of real use.

With this ground-work of classical learning you are prepared to enter upon the study of the several branches of medical education necessary to the practice of medicine.

The first of these is *Anatomy*, or the structure of the human body, as unfolded by the artificial separature or dissection of its component parts. This is the foundation of all true knowledge in medicine, and is indispensibly necessary both to the physician and the surgeon. By the study of anatomy you will learn the *figure, structure, connection, relative situation, and uses* of all the different parts of the human frame: you will learn the various contents of the *head, chest and belly*, and their relative situations; which is of the first importance to the physician, in ascertaining the seat and nature of the numerous diseases to which those parts of the body are exposed.

You will learn, by dissection, the course of the *blood-vessels*, and the distribution of

those which are most essential to life. This knowledge is especially necessary to the surgeon, both as his guide in the treatment of wounds, and to direct his knife in the several operations he may have occasion to perform. Without this direction, his patient may fall a victim to his rashness and his ignorance.

Anatomy also teaches the source, direction and situation of the several nerves—their connection with one another, and with the different parts of the body upon which they are severally distributed.

This knowledge will unfold many otherwise mysterious circumstances in the history of diseases: for, by the connection and communication which take place between nerves of distant parts of the body, we learn to account for symptoms attending some of its diseases, which, without this clew, would mislead us in our inquiries for the source of the evil, and thus would unavoidably lead to errors of practice destructive in their consequences. The study of this part of anatomy, and of the laws which more immediately govern the nervous system, should claim your especial notice. I must add, that this part of the human body, as connected with the symptoms

and cure of diseases, is, at present, too much neglected, and has been so since the days of the learned Dr. WHYTT, whose works deserve a distinguished place in your libraries.

The works best calculated to instruct you in the anatomy of the human body, are those of KEIL, HEISTER, CHESELDEN, SIMMONS, WINSLOW, DOUGLAS, the MONROS, the *Edinburgh System of Anatomy*, the *Prælectiones* of LEBER, the *Anatomical Writings* of JOHN BELL, the *Anatomical Dissections* by CHARLES BELL, and a *Compendium of Anatomy*, lately published at Edinburgh, by Mr. FYFE; to which we may add, the *Engravings* of ALBINUS, and the *coloured Plates* of M. JADELOT and VICQ. D'AZYZ.

The next subject of your attention, when you have acquired the necessary knowledge of the structure and composition of the body, is *Physiology*; by which you are to understand that branch of medical science which teaches the operation or office of its several component parts, and their relative importance in the preservation of life and health.—In this view it comprises,

1. An inquiry into the operation and influence of the *brain* and *nervous system*; their influence as the medium of communication

between mind and body, with their mutual operations upon each other; their influence as the medium of communication with the several objects with which we are surrounded; their influence upon muscular motion—upon the digestion and absorption of our food; its conversion into blood, together with its circulation and distribution through the different parts of our system, for the great purpose of nutrition; their influence upon the secretion and separation of such parts of the fluids as are redundant, or which, if retained, would prove injurious to the body; and, lastly, their influence upon the process of respiration, and those organs by which the species is continued.

This inquiry, you perceive, is of considerable extent, and constitutes an important part of the knowledge preparatory to the study of the nature of diseases, and the principles to be pursued in their prevention and cure.

Upon this subject you will do well to consult the *Elementa Physiologiæ* of HALLER, WHYTT *on the Nerves*, Dr. MONRO's *work upon the Nervous System*, his late *Treatises upon the Brain, Eye and Ear*, CREIGHTON *on Mental Derangement* (in which the laws

of the nervous system are detailed in a very perspicuous and instructive manner), the introductory chapters of the *Elementa Medicinæ* of Dr. BROWN, the works of GIRTANNER and THORNTON. And in the *Zoonomia* of Dr. DARWIN, you will find a large collection of facts illustrative of the operations of the nervous system: but you will recollect, when I recommend to you the works of BROWN, DARWIN, GIRTANNER and THORNTON, it is for the express purpose of acquiring a knowledge of the most important *facts* relative to the principles of life, and the general influence or operation of the brain and nervous system upon the different parts of the human body. I do not recommend them to your attention for the inferences their authors have deduced from those facts, and the application they have made of them to the practice of physic.

Upon this subject I must entreat you to suspend all attachment to any particular *theory, doctrine or system*, until you shall have stored your minds with an accurate knowledge of the obvious *causes, symptoms, and cure* of diseases, as they are detailed in the best practical writers.

2. Physiology comprises an inquiry into

the phenomena attendant on the *digestion* of food. It brings to view the different agents or powers concerned in that process, and the general principles upon which they operate; it examines the qualities of the several fluids of the stomach and intestines, as manifested by their *sensible properties*—as unfolded by a *chemical analysis*—and as ascertained by a series of well directed *experiments* upon their *solvent* powers; it also examines the powers of the stomach as a muscular organ acting *mechanically* upon its contents, and directs our attention to the general laws of *fermentation* and *mixture*, as occurring in the several changes which take place in the purfactive process of animal and vegetable matters out of the body, and, by the joint influence of these agents, unfolds the principle of digestion.—This knowledge becomes of great importance in the treatment of diseases, and, therefore, will claim your attention in a course of medical study. For this purpose I must recommend to your patient and attentive perusal, BARRY *on Digestion*, the *Dissertations* of SPALLANZANI, STEVENS *on Digestion*, JOHN HUNTER's observations upon this subject, and a *Treatise on Food*, lately published by Dr. FORDYCE.

3. Physiology, in like manner, makes us acquainted with the principles connected with the *absorption* of our food when digested, and the circumstances necessary to the healthy action of those vessels whose particular function it is to convey it from the intestinal canal into the blood-vessels, and to convert it into that bland and healthy fluid the *blood*, upon which the nourishment, life and growth of the different parts of the body depend. As these organs are not unfrequently the seat of dangerous diseases, it becomes necessary that you acquire a knowledge of the circumstances which are indicative of their healthy condition, that you may afterwards be enabled to know the changes which they undergo by disease, the causes producing the evil, and the principles upon which the remedy is to be prescribed. But you will also extend your researches to the absorbent system in general, as it is distributed over the several surfaces of the body, internally as well as externally. You will learn the several offices the absorbents are calculated to perform; the general laws or principles which govern their operation; and thence will be led to form correct notions of the diseases which

are induced by any deviation from their healthy action.

Upon this subject, the works of MONRO, HUNTER, HEWSON, SHELDON, and CRUIKSHANK, will furnish you with much useful information.

4. Physiology will also instruct you in the nature of the *circulation of the blood*; the component parts of that fluid, both as to quality and quantity; the powers upon which its circulation depends, as derived from the state of the brain and nerves—as dependant upon the qualities and temperature of the air we breathe—and as connected with the other functions of the system. The circulation of the blood is one of the first functions which manifests itself in the living body, and it is one of those which is of primary importance as necessary to its existence. It is also intimately connected with health, inasmuch as no one part of the constitution can be severely injured or affected without producing a corresponding derangement of the circulation of the blood; nor can this function be in the smallest degree deranged, without producing a general disorder in almost every other part of the animal economy.

An acquaintance, therefore, with the laws

of the circulation of the blood is inseparably connected with the nature and cure of diseases.

The writings upon this subject are so numerous, that I shall only direct your attention more particularly to the *first lines* of HALLER, HUNTER *on the Blood*, JOHN BELL'S work *upon the Heart and Blood-vessels*, HEWSON *on the Blood*, the *System of Physiology* by BLUMENBACH, ROBINSON *on the Animal Economy*, and a late work by Dr. FALCONAR, entitled, *Observations on the Pulse, &c.*

5. A fifth important branch of Physiology is *Respiration*.—In your inquiries upon this subject, you will learn the nature of the principles we imbibe from the atmosphere by inspiration, and the noxious qualities of those which escape from the blood in expiration. You will become acquainted with the agents concerned in this function; the circumstances which are necessary to their vigorous and healthy action; the connection between respiration and the circulation of the blood; its mechanical influence upon the process of digestion, and its connection with the other functions of the system.

Secing, then, that respiration is inseparably connected with life, and that the several

organs employed in that process are the subjects of disease, which, from their seat, must necessarily be dangerous to the constitution, you will perceive this inquiry to be an important part of medical education. Those works which will be most instructive to you upon this subject are, the *Physiology* of HALLER, CRAWFORD *on Animal Heat*, GOODWIN's *Dissertation on Respiration*, an *Essay* by Dr. MENZIES, and a late tract by Dr. THORNTON, with coloured plates, to illustrate the changes produced upon the blood by respiration. You will also find it amply treated of in many of the elementary writings of modern chemists, especially those of LAVOISIER, FOURCROY, CHAPTAL and PRIESTLEY.

6. Another object of your attention, in the study of the animal economy, is the *separation* or *secretion* from the blood of such fluids as are calculated for different offices in the human body connected with life and health, and the *excretion* of such as are to be rejected from the constitution, as superfluous and of noxious qualities: thus the *saliva*, *gastric juice*, *the bile*, *the pancreatic fluid*, and *mucus* of the intestinal canal, are all separated from the blood, for the purpose of digestion; and the several or-

gans concerned in this process are all moistened with a mild, soft fluid, that they may readily move upon one another, without injury.

The heart is surrounded with a liquor, which enables it to perform its constant duty in the circulation of the blood. The lungs, in like manner, are supplied with a fluid for the purpose of facilitating their motions in respiration. The *tears* are prepared as necessary to remove extraneous substances from the eyes, and as subservient to distinct vision. The ear is supplied with *wax*, to defend the tender organ of hearing. The joints are furnished with an oily fluid, that the bones may move freely upon one another.

To these we may add the *semen*, which is secreted for the purpose of generation;—the *liquor amnii*, or that fluid with which the womb is supplied for the preservation of the tender foetus;—and the *milk*, secreted for its nourishment after birth.

As the organs concerned in the secretion of the several fluids we have enumerated are subjects of disease, and, consequently, attended either with a depraved condition of those fluids, a total interruption to their secretion, or a morbid accumulation of them; the nature of those diseases, the investigation of

their causes, their mode of treatment, all demand an acquaintance not only with the structure of those organs, but also with the general principles or laws which are connected with the secretion of fluids.

As connected with the practice of physic, you will find it no less necessary to inform yourselves of the nature of the *excretions* as well as the secretions. They are the *urine*, *fæces*, and *perspiration*.

You will learn their several properties and characters, and the circumstances in which they are connected with life and health:— From this knowledge you will deduce some important inferences which admit of general application, not only in the treatment of diseases immediately connected with the excretory organs, but in the treatment of the greater part of the diseases to which the body is liable.

For information upon these subjects I must refer you to the physiological works already enumerated; to which must be added the writings of SANCTORIUS, DE GORTER, Dr. HALES, Mr. CRUIKSHANK, a late work upon the Nature and Properties of the Perspirable Matter by Mr. ABERNETHY, WILSON'S Experimental Treatise on the Gravel, AUSTIN ON

the Stone, and a work lately published under the title of a Treatise upon the Gravel and Gout. These last productions contain much useful and practical information relative to the secretions and excretions. Such are the leading objects of your attention in the study of Anatomy and Physiology.

But as the human body, in its structure and functions, bears some resemblance to other animals, and is governed by the general laws which pervade the animated parts of nature, the study of *Zoology* and *Natural History*, as connected with this subject, must be particularly instructive and interesting, and cannot but reflect much light upon the more abstruse parts of the human physiology.

With this view permit me to direct your attention to the Philosophy of Natural History, by SMELLIE; the Comparative Anatomy and Physiology, by VICQ. D'AZYZ, of which you will find a large abstract in the Encyclopædia; Dr. MONRO's Comparative Anatomy, with his celebrated work on Fishes; Dr. TYSON's Anatomy of the Orang Outang; and WHITE on Gradation.

Another remark occurs to me as worthy of your notice—that, in your inquiries into the laws which govern the human body,

you will also derive much advantage from a knowledge of the principles which influence the *inanimate* as well as the animated parts of nature, as unfolded by the sciences of *Chemistry* and *Natural Philosophy*.

Chemistry, whose express object it is to illustrate the nature and component principles of bodies, will be found of great use in your inquiries into the nature and functions of the human body. The numerous combinations which take place in the conversion of the various kinds of food into blood; the changes which are wrought upon that fluid by the action of the air, in its passage through the lungs, during the process of respiration; the changes which it afterwards undergoes in its circulation through the body; the production of animal heat; the new combinations which are produced by the processes of nutrition and secretion—are all, exclusively, the subjects of chemical investigation, and will, accordingly, demand a portion of your attention.

Natural Philosophy, in its various branches, will be no less useful in unfolding the laws of the other parts of the animal economy. *Mechanics, Hydraulics, Optics, Acoustics*, and

Pneumatics, are all necessary, and admit of extensive application in explaining the phenomena of *muscular motion*, the *circulation of our fluids*, the senses of *vision* and *hearing*, together with the influence of the atmosphere upon our bodies, especially as it regards its *sensible properties of gravity, heat and moisture*.

To this end it is, with me, a constant rule to advise every student of medicine under my immediate direction, who has not had the advantages of classical education, to attend one or more courses of lectures on Natural Philosophy, as taught in our College. It will occupy but a small portion of your time, and will, undoubtedly, compensate you with one of the most interesting subjects of human learning.

When you have become thus acquainted with the structure of the human frame—with the uses of its various component parts—their operation, as subservient to life and the healthy condition of the body—you are prepared for the study of the more immediate objects of your profession, the *History of Diseases*, comprehending their *symptoms*—the various *causes* which produce them, and the general principles upon which to

proceed in their *prevention* and *cure*, and a knowledge of the means by which they are accomplished.

Under this head I embrace the *Theory* and *Practice of Physic*, *Surgery*, *Midwifery* and the *Materia Medica*, including *Botany* and *Pharmacy*.

By the *theory* of medicine is understood, an explanation of the various phenomena which the body exhibits in a state of disease, and the deduction of those principles upon which the prevention and cure of diseases are to be conducted, which constitute the *practice of physic*.

Seeing the intimate connection that exists between these two departments of medicine, it will become a question of the greatest importance, in your first entrance upon this subject—How far does our art supply such a theory, or system of general principles, calculated to direct the practice of physic?

When we inquire into the success which has attended the investigation of the various other branches of science, we shall, in some degree, be enabled to judge, *a priori*, what may be expected in the science of medicine, which has always deservedly held a distinguished place as a branch of human learn-

ing. But when we are told that, excepting the *mathematics* and *mechanics*, all the other departments of philosophy rest upon hypothesis; when we are informed that *metaphysics*, *chemistry*, the *physiology of animals and vegetables*, are still vibrating between the different hypotheses which have been invented to unfold the great principles by which they are governed; and when we are told that even the system of *gravitation*, which was supposed to be established upon a basis firm as the earth itself, at this time has its opponents; and that many of the supposed principles of hydraulics and pneumatics are yet unsettled, we ought not to be surprised that the laws which influence the no less complex machinery of the human body in a state of health, should be but imperfectly understood; and, consequently, that, in a state of disease, its operations should be equally mysterious.

A cursory view of the various systems of medicine, as they are improperly denominated, which have appeared at different periods of the world, to explain the nature of disease, and to direct the practice of physic, cannot fail to impress your minds with just ideas of their instability, and, in some in-

stances, their fatal tendency, in as far as they are founded in conjecture, and thereby inculcate an uncertain mode of practice. This review will also serve to caution you against that undue attachment to particular opinions and doctrines which is so natural to the mind, especially in youth, when the imagination is most susceptible of impressions, and the judgment has the least influence in controuling its opinions.

I should not have ventured thus freely to have expressed myself upon this subject, if you were engaged in the study of medicine merely as a subject of curiosity and speculative learning; but I consider you as candidates for the practice of a profession which necessarily involves many sacred duties. I therefore must advise you to distrust the various doctrines you are to meet with in the course of your reading, as unsatisfactory at the bed-side, and not unfrequently calculated to mislead you into an uncertain and dangerous mode of practice.

Remember that period of superstition, in which it was supposed that diseases were inflicted by *evil spirits*, and were only to be cured by *charms* and *incantations*. Remember the fate which befel the *elements*, the ce-

lestial causes, the attractions and antipathies of HIPPOCRATES. Bear in mind the Peripatetic doctrines of GALEN, which were the guide of physicians until the beginning of the sixteenth century; the Corpuscularian doctrines of ASCLEPIADES, and as revived by GASSENDI; the chemical reveries of PARACEL-SUS and VAN HELMONT, which succeeded; the concoctions and ebullitions of SYDEN-HAM; the mathematical calculations of PIT-CAIRN and KEIL; the mechanico-chemical doctrines of WILLIS, BAGLIVY and HOFF-MAN; the anima medica of STAHL, of Ger-many—PERRAULT, in France—GAUBIUS, in Holland—PORTERFIELD and SIMSON, in Scotland—and NICHOLS and MEAD, in Eng-land; the humoral pathology of BOERHAAVE; the magnetism of MESSMER; the electrical system of SHAW. They are all forgotten.—In like manner, the doctrines of CULLEN; the excitement of BROWN; the irritability of GIRTANNER; the absorbent system of Dr. DARWIN; and the present revived Paracel-sian notions of THORNTON, TOWNSHEND and BEDDOES, may possibly, in a short time, be also consigned to oblivion.

At the same time that I thus endeavour to impress your minds with the danger of being

misled by those doctrines which have been enumerated, I also wish to annex to them their true value. Each of them I consider as true to a certain extent; but their authors, pleased with the success of the first application of them in unfolding some of the phenomena of disease, like parents amused with the first essays of their offspring, very soon became blind even to their faults. Hence the enthusiasm and zeal manifest in the writings of every inventor of a new system. By recollecting the strong propensity of the human mind to be enamoured of itself and its productions, they are to be forgiven; but let us profit from their faults; and although PARACELSUS ordered the works of his predecessors to be publicly burned, with great solemnity, let us preserve even *his* reveries from the funeral pile, for the sake of the small portion of truth which they may contain.—However fanciful and enthusiastic the various systems in physic may appear in many of those writers I have enumerated, they will be found the best guides in leading you to a knowledge of the fundamental principles which must govern you in practice, when, by your discernment, you may separate their *fancies* from their *facts*.

The faithful history and description of diseases, the enumeration of the causes which produce them, and the most successful modes of treatment, as they are detailed in the writings of HIPPOCRATES, GALEN, SYDENHAM, BAGLIVY, HOFFMAN, BOERHAAVE, CULLEN and DARWIN, you will find indispensibly necessary for your knowledge of those subjects; and remember, in the course of your reading upon the practice of physic, to add to this catalogue the valuable writings of WHYTT, PRINGLE, BLANE, HUXHAM, the two LINDS, FOTHERGILL, LETTSOM, DUNCAN, the GREGORYS, CLEGHORN, SAUNDERS, JACKSON, GRANT, CHISHOLM, and our countryman, Dr. RUSH.

Upon this part of our subject, suffer me to call your attention to the necessity of perusing the works of the *ancient* writers in medicine, as well as the more fashionable productions of *modern* times. Within a few years they have not held the same place which they formerly occupied in the estimation of medical men. This I can readily ascribe to the boasted philosophy lately introduced into the theory and practice of physic: for remember there is a sort of fashion in medicine as well as in dress, and

many valuable works are at present thrown aside, as not suiting the prevailing opinions of the time; but, like many garments of ancient date, although their *manner* may not be adapted to the fashion of the day, they are frequently made up of materials infinitely more valuable than the tinsel of modern discovery. But in this country, I trust, another reason may be given for this inattention to the works of antiquity—that our libraries do not supply the pupil with the means of obtaining an acquaintance with them. I rejoice to inform you, that in this city, this last difficulty has been, in some degree, removed by the late accession to the Medical Library of the *New-York Hospital*, and that the original works of HIPPOCRATES, GALEN, CELSUS, VESALIUS, EUSTACHIUS, VIEUSSEN, RIVERIUS, BONETUS, ALBINUS, BAGLIVY, HOFFMAN, and many others, are now to be found in that valuable repository of medical learning. I cannot pass by this circumstance without bearing testimony to the liberality of the gentlemen who compose the Board of Governors of that institution. Entertaining a due sense of the importance of that establishment, as a place of instruction to the student of medicine, they have not only em-

braced every opportunity, but they have eagerly sought for occasions by which they could render it most profitable to the pupils who attend the practice of the house, as well as a comfortable asylum to the sick who are the objects of its charity. Actuated by this principle, in the year 1797 they founded the present Medical Library, to which the Faculty of Physic of Columbia College also liberally contributed, not only by their attention in the management and regulation of it, but by pecuniary aid, and the contribution of such volumes as they could spare from their own private libraries. Within a few months, an addition has been made, by the Governors, of some hundred volumes, consisting of many of the most respectable writings, both of ancient and modern times. Another contributor to this valuable collection must be remembered with grateful acknowledgments,—Dr. LETTSOM, of London—whose benevolence and learning entitle him to the esteem and respect of every friend to virtue and science.

Remember, at the same time that you are perusing the works which have been enumerated, that, however celebrated their authors, whether ancient or modern, they

are but *copies* taken from the *original*, with which you should also become acquainted.

The sick-room is an indispensibly necessary place of study for the medical pupil. The infinite number of changes which the body undergoes, by the numerous varieties of disease, can only be acquired by a close and watchful observance at the bed-side of the sick. In addition, therefore, to books, let me recommend to you a punctual and constant attention to this source of practical knowledge. In the New-York Hospital you have an ample opportunity of becoming acquainted with a great variety of diseases, especially those which most frequently occur in this climate and country. Do not, therefore, forego so valuable a source of practical information. Make frequent visits to the sick: record their *age*, their *sex*, their *occupation*, their *temperament*, their general *external appearances*: patiently listen to the *history* of their complaints: trace their *commencement*, their *progress*, and the *changes* they may have undergone previous to their admission into the hospital, as well as their conditions at the time of your visit: inquire into the *state of their various functions* as influenced by the disease: remark the *season of the year*,

the *prevailing diseases*, and the state of the *weather*. These inquiries satisfied, record the *medicines*, the *diet*, and the *regimen* which may be prescribed by the physician, and, when you have returned to your closet, consult the best practical writers upon those diseases which you may have witnessed. By comparing their opinions and prescriptions, you will acquire not only a knowledge of the most successful modes and principles of practice, but also a facility in distinguishing diseases, which, by the careless observer, are frequently confounded.

The next subject of your attention is *Surgery*.

Such is the present state of society in this country, the profession of physic has not hitherto called for, nor does it admit of, those distinctions that have been made in the more populous and wealthy cities of Europe—Hence the *Practice of Physic*, *Surgery*, and the *Obstetric Art*, are frequently united in the same person: accordingly, you will find it necessary to devote a portion of your time and attention to those last-mentioned branches of medicine.

By surgery is generally understood the mechanical application of remedies to wounds,

and other accidents or diseases incident to the human body; or, as CELSUS defines it, *medicinæ pars est quæ manu curat*. But this definition conveys but a very imperfect idea of the importance and extent of this branch of the healing art. The mechanical operations of surgery, the dressing of wounds, the reduction of fractures and dislocations, in my opinion, constitute the smallest part of surgery, and would be executed with more address and skill by the mechanic, than by many of those who call themselves operators.

Such is the constitution of the human frame, that when one part of the body becomes the seat of disease, the whole system partakes of the affection, and, in its turn, re-acts upon the part diseased, producing changes corresponding with the general condition of the body at the time of the accident, or as induced by the first operation of the disease itself. Hence, in every accident or disorder which falls within the province of surgery, it is the business of the surgeon to notice the changes produced upon the general health of the system, and the subsequent effect of those changes upon the seat and origin of the disease. It is, therefore, no less necessary to feel the pulse of the pa-

tient in the treatment of a fractured limb, than it is in the management of a violent and dangerous fever. You will then readily perceive the connection between the practice of physic and surgery, and the necessity of attending to the former as subservient to the latter. In a word, every surgeon must be first a physician.

These remarks will suggest to you some hints relative to the prosecution of this part of your medical studies. They point out to you the importance of an accurate knowledge of the structure of the body, and an intimate acquaintance with the laws which govern and influence its various functions, as preparatory to the more immediate objects of surgery. They will also serve to impress your minds with the necessity of attending not only to the detail of the various steps of an operation, and a description of the instruments with which it is to be conducted, but also to the nature and extent of the disease; the circumstances which are to determine whether an operation be required for the removal of it; the general condition of the patient; the season in which it can be done with the greatest prospect of benefit; and the preparatory measures to be pursued to

give it all possible advantage. Such are the objects of your inquiries, when engaged in this branch of medical education.

The writings upon surgery, which you will peruse with most advantage, are, *a Treatise on Surgery, by Mr. KIRKLAND; the works of Mr. POTT; the System of Surgery, by BENJAMIN BELL; JOHN BELL's Treatise on Wounds; the Dissections of CHARLES BELL*, which contain many valuable observations relative to the practice of surgery; *O'HALLORAN on the Diseases of the Head; EARLE on the Stone, Hydrocele, and Curvature of the Spine; SHELDEN on the Fracture of the Patella; RUSSEL's Treatise on Necrosis; the works of Mr. ABERNETHY; the Chirurgical Transactions*, lately published in London; *the surgical writings of Professor RICHTER, of Gottingen, and BOHN, of Amsterdam*. Nor must we forget, in this catalogue, the many valuable tracts contained in the *Transactions of the Academy of Surgery at Paris*, and the *Chirurgical Journal of DESSAULT*.

The last branch of practice which will call for your attention is *Midwifery*.

This department of medical knowledge has for its objects not only the delivery of women in child-bed, and the diseases more im-

mediately attendant upon parturition; but also those disorders which are peculiar to pregnancy, those which succeed to delivery, and are connected with the puerperal state, and the diseases of early infancy.

Before you proceed to these subjects, you will find it necessary to make yourselves well acquainted with the *anatomy* of the female pelvis, of the gravid uterus, and other parts which are concerned in the process of parturition, or which become the seat of disease. You will be enabled to understand the influence of those organs upon the constitution, the changes which are wrought by pregnancy, and the diseases peculiar to that condition.

Your next object in this inquiry will be the process of parturition—its effects upon the system, and the diseases which it occasionally produces—the circumstances which distinguish *natural* labour, which is to be left to the operations of nature, from that which is *preternatural*, and requires the interference of art.

You will next learn the various kinds of preternatural labour, the characteristic circumstances of each, and the peculiar treatment which each demands.

I do not know, in the whole course of medical practice, any situation in which your talents and professional knowledge are more required, or in which your sensibility is more excited, than in the treatment of the various accidents and difficulties which attend the practice of midwifery. Remember, in many instances, both the lives of the mother and child depend upon your knowledge of this subject, and an error of judgment, or ignorance of the mode of treating the particular circumstances of the case before you, may prove not only fatal to them, but also destructive to your reputation as a practitioner. Your responsibility, therefore, in situations thus interesting, must necessarily call for your attention to this subject in proportion to its importance.

The *regimen*, or *management of women in child-bed*, as preventive of the diseases incident to that state, as well as the peculiar treatment of the diseases to which they are then exposed, will also become subjects of your especial notice and inquiry.

For your information upon those subjects, I must refer you to the works of MAURICEAU, LA MOTTE, GIFFORD, SMELLIE, PERFECT, SPENCE, WHITE, LEAKE, Dr. WIL-

LIAM HUNTER, PLENCK, CLARKE, DENMAN, the HAMILTONS, BLAND and RIGBY, as the best writers upon midwifery. Upon the diseases of children you will do well to consult the writings of SPARMAN, MOSS, HARRIS, SMITH and UNDERWOOD, which are expressly upon that subject.

But the best writings upon midwifery are insufficient to instruct you in this art. They are essentially necessary to make you acquainted with the principles of it; but observation at the bed-side can alone convey to you just ideas of the practical application of those principles.

The Lying-in Hospital of this city, which originated in the benevolent subscription of the citizens of New-York, and was established in 1798, will afford to the diligent and attentive student of midwifery, abundant opportunities of practical instruction upon this subject.

The remaining subject of inquiry, to qualify you for the Practice of Physic, is the *Materia Medica*.

The *Materia Medica*, taking the term in its fullest latitude, embraces for its objects all those matters which enter into the medical treatment or cure of diseases; or, in other

words, it treats of *medicines, diet and regimen*.

As the greater part of the articles employed in the practice of physic are derived from the *animal, vegetable, and mineral* kingdoms, you will find it necessary to know the place they severally hold in the systems of *Zoology, Botany, and Mineralogy*: but as these subjects are included under that of Natural History, already recommended to your attention, I shall only, in this place, take occasion to remark, that you will find the science of Botany, including the philosophy of vegetation, particularly useful, as connected with the general principles of physiology, and as subservient to a knowledge of the properties of those plants which are employed as articles of the *materia medica*: for between the botanical characters of plants, and their medicinal virtues, there is frequently an intimate connection, with which the physician should become acquainted.

To those who wish to acquire a knowledge of the profession of physic as a branch of philosophy, as well as the doses of medicine, or the formula of prescriptions, the study of the vegetable kingdom must prove a source of much useful information. The *anatomical*

cal structure of plants, the nature of the relation they bear to minerals, in their origin, life, growth, manner of receiving nourishment; their different kinds of food, propagation of their species, diseases, natural decomposition; their elementary principles, as afforded by a chemical analysis, and the different changes they produce upon our atmosphere, are certainly subjects of great value and importance to the physician as well as to the philosopher. As they are subjects calculated to illustrate the general principles of physiology, and as connected with health and the cure of diseases, they cannot be thrown aside as mere matter of speculative inquiry. Considered in this view, as they have been by a HALE, an INGENHOUS, and a PRIESTLEY, we cannot pass them by as objects either useless or indifferent. If, then, the structure and physiology of vegetables be of importance to a physician, in enabling him to become better acquainted with the structure and physiology of the human body, a knowledge of which is the only true guide of his practice in alleviating and curing its diseases, and which forms a line of distinction between the enlightened physician and the empiric, it is certainly of no less importance, that he

should have a knowledge of those plants which are employed in the practice of physic, more especially if it be his lot to reside in the country, where many of them are the spontaneous produce of his own neighbourhood. But it is more especially necessary for him to become familiarly acquainted with those plants that are of a poisonous nature, which, though comparatively few in number, are scattered wild over our fields and pastures, and oftentimes mix with the culinary produce of our gardens. How degrading, then, must it be to the Physician not to know his food from his poison, and can mistake a *Hemlock* for a *Parsley*, or the leaves of *Foxglove* for those of *Mullein*!

As it is, therefore, one of the great objects of Botany to teach us the natural history of those vegetables which are employed in the cure of diseases; and as the virtues of medicines are, in many instances, connected with their botanical characters; it has been thought expedient to unite these two branches of medical learning in the same professorship. But there are several other arguments which may be adduced for the cultivation of botanical science, especially in the United States.

The only works which supply any useful

information relative to the native vegetable productions of this vast country, as far as has fallen to my observation, are those of SHOEFT, WANGENHEIM, KALM, CATESBY, CLAYTON, JEFFERSON, MARSHALL, MUHLBERG, BARTRAM, COLDEN, CUTLER, and BELKNAP; to which may be added the accidental observations of travellers. And it is to be observed that those works, except the travels of Professor KALM, the writings of WANGENHEIM, and the *Arbustrum Americanum* of MARSHALL, only relate to the productions of some particular States, especially the Carolinas, Virginia, Pennsylvania, New-York and Massachusetts. Many of those, again, contain but the description of the plants of particular districts or townships in those States. Much, then, remains to be done in this western part of the globe. Many accessions are still necessary, from the immense treasures of America, to complete the volume of botanical science. And for those whose taste and circumstances may lead to this extensive and important inquiry in the natural history of our country, great reputation is reserved to reward their labours.

The *Peruvian Bark*, the *Ipecacuanha*, the *Seneka* and *Virginia Snake-root*, the *Carolina*

Pink-root, the *Sassafras*, the *Dogwood*, the *Butternut*, the *Chamomile*, the *Forglove*, the *Thoroughwort*, the *Poke*, the *Stramonium*, and the *Toxicodendron*, are but a small part of the medicinal productions of America: and when we consider the fertility and diversity of our soils, the great variety of our climate, and especially when we recollect that America has already furnished the world with many of the most valuable articles, both of food and medicine, there can be no hesitation to believe that we may here meet with almost every vegetable production of the earth, whether for food, for medicine, or as useful in the arts and manufactures.

The works best calculated to instruct you in this interesting branch of medicine, are those of TOURNEFORT, LINNÆUS, SMITH, WOODVILLE, CURTIS, DICKSON, MARTYN, WITHERING, LIGHTFOOT, HUDSON, MURRAY, GILIBERT, LAMARCK, L'HERITIER, BULLIARD, JUSSIEU, MILNE, LEE, and HULL.*

But, gentlemen, it must naturally occur to you, that an abstract account of the principles of this science, even though illustrated by *figures*, however elegantly coloured, or

* For a more full account of the most esteemed botanical works, see my Syllabus of Botanical Lectures, published in 1795.

by *dried plants*, however carefully they may be preserved, must be necessarily very imperfect, when compared with the examination of living plants, growing in their proper soils, with the advantages of culture. I sincerely regret, both on your account and the reputation of our college, that the want of a Botanic Garden renders this part of our system of medical education incomplete. But such an establishment is not to be accomplished by the exertions of the individual. It calls for the countenance and attention of our Legislature. It is in this way so much has been accomplished in exploring the different countries of Europe. It is to public establishments, and endowments, of this sort, they are indebted for the rapid progress they have made in the knowledge of natural history, in the principles of agriculture, and, I may add, as connected with these, the general diffusion of philosophical learning, and its practical application to the different purposes of human life. But such has been the munificence of the Legislature of New-York, in the patronage of our Hospital and Colleges—such has been their liberality in the support of the other departments of medical learning in Columbia College, we have every reason to

expect that the establishment of a Botanic Garden, as far as shall be subservient to the great purposes of medicine and agriculture, will also, in a short time, meet with their general design of protecting useful knowledge, and those arts which are most essentially connected with human happiness.

There are also many articles of the *Materia Medica* which are derived from the *fossil* kingdom, and which undergo many artificial changes before they become the subjects of medical prescription. Such are those known under the title of *chemical* medicines. Another important science here presents itself to your view, as necessary to the Physician. *Chemistry* has already been noticed, as an art highly useful in unfolding many of the phenomena and functions of the human body. But it is of no less importance in enabling you to understand the nature of many of the medicines you will have occasion to prescribe, and the pharmaceutical changes they have undergone in acquiring their medical properties. The writings of BLACK, LAVOISIER, CHAPTAL, FOURCROY, CAVENDISH, BERTHOLLET, GREN, JACQUIN, PRIESTLEY, NICHOLSON, and those of our learned Professor of Chemistry, Dr. MITCHILL, will supply you with a knowledge of this subject.

When you have thus acquired a knowledge of the natural history of the medicines which compose the *Materia Medica*, and the artificial changes they undergo to render them fit for use, you will be prepared to investigate their virtues, and mode of operation in the cure of diseases.

I shall conclude this discourse with a prospectus of the plan I propose to observe in the ensuing course of Lectures; which will, at the same time, convey to you some idea of the extent and value of this branch of medical education.

As this subject divides itself under the three great heads of *Medicine*, *Diet*, and *Regimen*, I propose,

1st. To distribute all the articles of medicine into a certain number of classes, according to their effects or operation upon the human body: and, as our knowledge of medicines is only useful as it directs us in the cure of diseases, I shall, as far as is practicable, preserve a connection between the classes of medicine and the general nature of the diseases in which they are chiefly to be employed. I am aware that this is not always to be accomplished, as the same medicine is frequently exhibited in diseases of a very opposite nature.

2d. I shall endeavour to explain the general principles upon which those classes of medicines operate upon the system in producing their effects, laying before you the different theories which have been adopted by different writers in accounting for their manner of operation.

3d. It will be my intention to point out the diseases, and particular circumstances, in which they are severally to be exhibited.

4th. I shall proceed to describe the particular medicines belonging to each class; their *natural history*; the *changes or artificial processes* they undergo to render them fit for use; the *doses or quantities* of each to be administered; and other circumstances which may govern their exhibition.

Under the head of *Diet* I shall offer you some general observations upon the different kinds of food; their effects upon the system in health and disease; with some general rules to be observed in the diet of the sick, according to the nature of their diseases.

The third division of our subject takes in a view of the circumstances necessary to be attended to in the treatment of the sick, which are not enumerated under the two former heads. These are, *Climate, Air, Ex-*

ercise, Sleep, and Cloathing, constituting what practical writers have denominated *Regimen*.

For the most part, writers upon the *Materia Medica* confine themselves to the consideration of medicines and diet only, excluding regimen, which, in many instances, especially in the treatment of chronic diseases, appears to be as necessary an object of the Physician's notice and prescription as either medicine or diet. I have, therefore, thought proper to introduce it as a part of our course, not only as it strictly belongs to the *Materia Medica*, but especially with a view to call your attention to a subject which is too much neglected, both by the pupil and the practitioner of medicine.

In prosecuting this branch of your medical studies, I must recommend to you a careful perusal of the second volume of the *Conspectus Medicinæ* of Dr. GREGORY, the *Apparatus Medicaminum* of Professor MURRAY, Dr. CULLEN's *System of the Materia Medica*, the *Therapeutics* of Dr. DUNCAN, and the valuable *Lectures upon Diet and Regimen* lately published by Dr. WILlich.

THE END.